IN THE CLAIMS

1. (currently amended) A semiconductor structure comprising:

(a) a silicon substrate;

(b) a layer of aluminum directly overlying a first surface of said substrate;

(c) a polycrystalline nucleation layer of a nitride semiconductor directly overlying said aluminum layer;

(d) a buffer structure including one or more superlattices overlying said nucleation layer, each said superlattice including a plurality of nitride-based semiconductors of different compositions, each of said plurality of nitride-based semiconductors of at least one said superlattice having its respective composition according to the formula $Al_rGa_{(1-r)}N$, where $0<r<1$; and

(e) an operative structure of one or more gallium nitride-based semiconductors overlying said buffer structure.

2. (original) A structure as claimed in claim 1 wherein said buffer structure includes a first superlattice, an intermediate layer of a nitride-based semiconductor overlying the first superlattice, and a second superlattice overlying the intermediate layer.

3. (currently amended) A structure as claimed in claim 2 wherein each of said first and second superlattices consists essentially of a plurality of semiconductors each of which has its respective composition according to the formula $Al_rGa_{(1-r)}N$ where $0<r<1$~~$0\leq r\leq 1$~~.

4. (original) A structure as claimed in claim 3 wherein each of said first and second superlattices consists of only two semiconductors having different values of r.

5. (original) A structure as claimed in claim 4 wherein the semiconductors included in said first superlattice

are the same as the semiconductors included in said second superlattice.

6. (original) A structure as claimed in claim 3 wherein said first superlattice directly overlies said nucleation layer.

7. (original) A structure as claimed in claim 6 wherein said nucleation layer consists essentially of aluminum nitride.

8. (original) A structure as claimed in claim 1 wherein said buffer structure includes a first superlattice directly overlying said nucleation layer.

9. (currently amended) A structure as claimed in claim ~~6~~8 wherein said nucleation layer consists essentially of aluminum nitride.

10. (withdrawn) A structure as claimed in claim 1 wherein said operative structure includes a first layer of nitride semiconductor; said structure further comprising at least one first metal layer overlying said first layer of nitride semiconductor and forming a Schottky contact therewith.

11. (withdrawn) A structure as claimed in claim 10 wherein said first layer of nitride semiconductor includes a gallium-nitride-based semiconductor.

12. (withdrawn) A structure as claimed in claim 10 wherein said first layer of nitride semiconductor includes GaN.

13. (withdrawn) A structure as claimed in claim 10 further comprising at least one further metal layer overlying a second surface of said silicon substrate and forming an ohmic contact therewith.

14. (withdrawn) A structure as claimed in claim 10 wherein said operative structure includes a further layer of nitride semiconductor disposed between said first layer of nitride semiconductor and said buffer structure; said further layer of nitride semiconductor having a higher doping

concentration than that of said first layer of nitride semiconductor.

15. (withdrawn) A structure as claimed in claim 14 wherein said further layer of nitride semiconductor includes a gallium nitride-based semiconductor.

16. (withdrawn) A structure as claimed in claim 14 wherein said further layer of nitride semiconductor includes GaN.

17. (withdrawn) A structure as claimed in claim 10 wherein said first layer of nitride semiconductor overlays an entire width of said buffer structure, and said first metal layer overlays an entire width of said first layer of nitride semiconductor.

18. (withdrawn) A structure as claimed in claim 10 wherein said first layer of nitride semiconductor overlays a portion of said buffer structure, and said first metal layer overlays an entire width of said first layer of nitride semiconductor.

19. (currently amended) A semiconductor structure comprising:

(a) a silicon substrate;

(b) a polycrystalline nucleation layer of a nitride semiconductor overlying a surface of said substrate;

(c) a buffer structure including a first superlattice directly overlying said nucleation layer, said first superlattice including a plurality of nitride-based semiconductors of different compositions, each of said plurality of nitride-based semiconductors having its respective composition according to the formula $Al_rGa_{(1-r)}N$, where $0<r<1$; and

(e) an operative structure of one or more gallium nitride-based semiconductors overlying said buffer structure.

20. (original) A structure as claimed in claim 19 wherein said nucleation layer consists essentially of aluminum nitride and said first superlattice consists essentially of semiconductors according to the formula $Al_rGa_{(1-r)}N$ where $0 \leq r \leq 1$.

21. (original) A structure as claimed in claim 19 wherein said buffer structure includes an intermediate layer of a nitride-based semiconductor overlying said first superlattice, and a second superlattice including a plurality of nitride-based semiconductors overlying the intermediate layer.

22. (currently amended) A structure as claimed in claim 21 wherein ~~each of~~ said ~~first and~~ second superlattice~~s~~ consists essentially of a plurality of semiconductors each of which has its respective composition according to the formula $Al_rGa_{(1-r)}N$ where $0<r<1$ ~~$0 \leq r \leq 1$~~.

23. (original) A structure as claimed in claim 22 wherein each of said first and second superlattices consists of only two semiconductors having different values of r.

24. (original) A structure as claimed in claim 23 wherein the semiconductors included in said first superlattice are the same as the semiconductors included in said second superlattice.

25. (withdrawn) A structure as claimed in claim 19 wherein said operative structure includes a first layer of nitride semiconductor; said structure further comprising at least one first metal layer overlying said first layer of nitride semiconductor and forming a Schottky contact therewith.

26. (withdrawn) A structure as claimed in claim 25 wherein said first layer of nitride semiconductor includes a gallium nitride-based semiconductor.

27. (withdrawn) A structure as claimed in claim 25 wherein said first layer of nitride semiconductor includes GaN.

28. (withdrawn) A structure as claimed in claim 25 further comprising at least one further metal layer overlying

another surface of said silicon substrate and forming an ohmic contact therewith.

29. (withdrawn) A structure as claimed in claim 25 wherein said operative structure includes a further layer of nitride semiconductor disposed between said first layer of nitride semiconductor and said buffer structure; said further layer of nitride semiconductor having a higher doping concentration than that of said first layer of nitride semiconductor.

30. (withdrawn) A structure as claimed in claim 29 wherein said further layer of nitride semiconductor includes a gallium nitride-based semiconductor.

31. (withdrawn) A structure as claimed in claim 29 wherein said further layer of nitride semiconductor includes GaN.

32. (withdrawn) A structure as claimed in claim 25 wherein said first layer of nitride semiconductor overlays an entire width of said buffer structure, and said first metal layer overlays an entire width of said first layer of nitride semiconductor.

33. (withdrawn) A structure as claimed in claim 25 wherein said first layer of nitride semiconductor overlays a portion of said buffer structure, and said first metal layer overlays an entire width of said first layer of nitride semiconductor.

34. - 92. (cancelled)